



AI-Assisted Trauma Triage: Transforming Emergency Care Through Intelligent Decision Support

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Introduction

Trauma remains one of the leading causes of death and disability worldwide, particularly in cases involving road accidents, natural disasters, and violent injuries. In emergency settings, rapid and accurate triage is critical to prioritize patients based on the severity of their condition. Traditional trauma triage relies heavily on clinical judgment, standardized scoring systems, and time-sensitive assessments performed under intense pressure. While effective, these approaches can be limited by human fatigue, incomplete information, and resource constraints. AI-assisted trauma triage is emerging as a powerful tool to enhance decision-making, improve response times, and optimize patient outcomes [1,2].

AI-assisted trauma triage systems use machine learning algorithms and real-time data analysis to evaluate patient conditions quickly and accurately. By integrating data from vital signs monitors, medical imaging, electronic health records, and wearable devices, these systems provide evidence-based recommendations to support emergency clinicians [3-5].

Discussion

At the core of AI-assisted trauma triage is predictive analytics. Machine learning models are trained on large datasets of trauma cases, learning to identify patterns associated with severe injury, hemorrhage risk, or organ failure. When a new patient arrives, the system processes input data such as heart rate, blood pressure, oxygen saturation, and injury mechanism. Within seconds, it can estimate the probability of critical outcomes and suggest appropriate triage levels.

In prehospital settings, AI tools integrated into ambulances can assist paramedics by analyzing portable ultrasound images or monitoring vital signs during transport. This capability enables earlier identification of life-threatening conditions and better coordination with receiving hospitals. In mass casualty incidents, AI systems can rapidly categorize multiple patients simultaneously, helping allocate

limited resources more effectively.

Natural language processing also plays a role in analyzing emergency call transcripts or physician notes, extracting relevant clinical information to support triage decisions. Computer vision algorithms can evaluate medical imaging, such as CT scans, to detect internal bleeding or fractures with high accuracy.

Despite its promise, AI-assisted trauma triage faces important challenges. Data quality and representativeness are critical for reliable performance. Bias in training datasets can lead to disparities in care. Ethical considerations, patient privacy, and regulatory approval processes must also be carefully addressed. Importantly, AI systems are designed to support—not replace—clinical expertise.

Conclusion

AI-assisted trauma triage represents a significant advancement in emergency medicine, offering faster, data-driven decision support in high-pressure situations. By enhancing accuracy, improving resource allocation, and enabling earlier intervention, AI has the potential to save lives and improve outcomes. While technical, ethical, and regulatory challenges remain, continued research and responsible implementation will help integrate AI effectively into trauma care systems. As healthcare evolves, intelligent triage solutions will become an essential component of modern emergency response.

References

1. Bilen O, Ballantyne CM (2016) Bempedoic Acid (ETC-1002) An Investigational Inhibitor of ATP Citrate Lyase. *Curr Atheroscler Rep* 18: 61.
2. Zagebaum NK, Yandrapalli S, Nabors C, Frishman WH (2019) Bempedoic Acid (ETC-1002): ATP Citrate Lyase Inhibitor: Review of a First-in-Class Medication with Potential Benefit in Statin-Refractory Cases. *Cardiol Rev* 27: 49-56.
3. Benoit Viollet, Bruno Guigas, Nieves Sanz Garcia, Jocelyne Leclerc, Marc Foretz, et al. (2012) Cellular and molecular mechanisms of Bempedoic Acid. An overview, *Clinical Science (London)* 122: 253- 270.
4. Phan BA, Dayspring TD, Toth PP (2012) Ezetimibe therapy: mechanism of action and clinical update. *Vasc Health Risk Manag* 8:415-27.
5. Kosoglou T, Statkevich P, Johnson-Levonos AO, Paolini JF, Bergman AJ, et al. (2005) A review of its metabolism, pharmacokinetics and drug interactions. *Clin Pharmacokinet* 44: 467-94.